

Claims

[c1]

1. A crane hoist apparatus for use in moving items within, into, out of, and adjacent to an interior of a containerized cargo enclosure with a minimal loss of interior enclosure volume from the crane, comprising:

(a) a first frame having a plurality of beams that each include a lengthwise span, a width, and a depth, said first frame is adapted to be supported by the containerized cargo enclosure;

(b) a second frame having a beam with a lengthwise span, a width, and a depth, said second frame is slidably supported by said first frame in an approximately transverse span orientation such that said second frame depth does not extend below said first frame depth, said second frame is able to move in a direction parallel to said first frame span; and

(c) a winch carriage that is slidably supported by said second frame such that said winch does not extend below said second frame depth, said winch being able to move in a direction parallel to said second frame span.

[c2]

2. A crane hoist apparatus according to claim 1 wherein said first frame is adapted to attach to the interior of the containerized cargo container with a slidable support that allows said first frame to movably extend parallel to said first frame spans between a first retracted position in which said first frame is accommodated entirely within the interior of the containerized cargo enclosure to a second extended position in which said first frame extends to an exterior of the containerized cargo enclosure from the interior of the containerized cargo enclosure.

[c3]

3. A crane hoist apparatus according to claim 2 further including a first plurality of rollers for supporting said first frame in the interior of the containerized cargo enclosure.

[c4]

4. A crane hoist apparatus according to claim 1 wherein said second frame includes a second plurality of rollers for slidably supporting said second frame by said first frame.

[c5]

5. A crane hoist apparatus according to claim 4 wherein said second plurality of rollers includes a plurality of second large rollers having a rotational axis

B₁

parallel to said first frame beam width and a plurality of second small rollers having a rotational axis parallel to said first frame beam depth.

Sub A2

[c6]

6. A crane hoist apparatus according to claim 1 wherein said winch carriage includes a third plurality of rollers for supporting said winch carriage by said second frame.

Sub B₁

[c7]

7. A crane hoist apparatus according to claim 6 wherein said third plurality of rollers includes a plurality of third large rollers having a rotational axis parallel to said second frame beam width and a plurality of third small rollers having a rotational axis parallel to said second frame beam depth.

Sub A3

[c8]

8. A crane hoist apparatus for use in moving items within, into, out of, and adjacent to an interior of a containerized cargo enclosure with a minimal loss of interior enclosure volume from the crane, comprising:

(a) a first frame having a plurality of beams that are each constructed an angle beam that includes a horizontal extension, a vertical extension and a lengthwise span, said first frame is adapted to be supported by the containerized cargo enclosure;

(b) a second frame having a beam that is constructed of an angle beam that includes a horizontal extension, a vertical extension and a lengthwise span, said second frame is slidably supported by said first frame in an approximately transverse span orientation such that said second frame does not extend below said first frame vertical extension, said second frame is able to move in a direction parallel to said first frame span; and

(c) a winch carriage that is slidably supported by said second frame such that said winch does not extend below said second frame vertical extension, said winch being able to move in a direction parallel to said second frame span.

[c9]

9. A crane hoist apparatus according to claim 8 wherein said first frame is adapted to attach to the interior of the containerized cargo container with a slidable support that allows said first frame to movably extend parallel to said first frame spans between a first retracted position in which said first frame is accommodated entirely within the interior of the containerized cargo enclosure to a second extended position in which said first frame extends to an exterior

of the containerized cargo enclosure from the interior of the containerized cargo enclosure.

A₃

[c10]

10. A crane hoist apparatus according to claim 9 further including a first plurality of rollers for supporting said first frame in the interior of the containerized cargo enclosure.

[c11]

11. A crane hoist apparatus according to claim 8 wherein said second frame includes a second plurality of rollers for supporting said second frame by said first frame.

Sub B₁

[c12]

12. A crane hoist apparatus according to claim 11 wherein said second plurality of rollers includes a plurality of second large rollers that are in rolling engagement with said first frame horizontal extension and a plurality of second small rollers that are in rolling engagement with said first frame vertical extension.

Sub A₄

[c13]

13. A crane hoist apparatus according to claim 8 wherein said winch carriage includes a third plurality of rollers for supporting said winch carriage by said second frame.

Sub B₁

[c14]

14. A crane hoist apparatus according to claim 13 wherein said third plurality of rollers includes a plurality of third large rollers that are in rolling engagement with said second frame horizontal extension and a plurality of third small rollers that are in rolling engagement with said second frame vertical extension.

[c15]

15. A method of moving items within, into, out of, and adjacent to a containerized cargo enclosure by use of a crane hoist apparatus that is adapted to be supported by the enclosure that can move items from a first location to a selected location, comprising the steps of:

- (a) providing a crane hoist apparatus that is adapted to be supported by the enclosure;
- (b) moving in combination, a winch carriage on a second frame of said crane hoist apparatus and said second frame on a first frame of said crane hoist apparatus to the first location;
- (c) lowering a winch carriage cable and hook assembly of said winch carriage to

a first selected elevation;

(d) attaching said cable and hook to the item;

(e) lifting the item with said cable and hook to a second selected elevation;

(f) moving in combination, said winch carriage on said second frame of said crane hoist apparatus and said second frame on said first frame of said crane hoist apparatus to the selected location; and

(g) lowering the item to rest on a support surface using said carriage winch cable and hook.

[c16] 16. A method of moving items according to claim 15 further comprising the step of extending said first frame from a first retracted position from an enclosure interior to a second extended position to an exterior of the enclosure to move items adjacent to or out of the enclosure.

[c17] 17. A method of moving items according to claim 16 further comprising the step of retracting said first frame from said second extended position to said first retracted position to move items into or within the enclosure interior.

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